L Number	Hits	Search Text	DB	Time stamp
1	20085	time with domain	USPAT	2003/02/20 12:26
2	88306	spatial	USPAT	2003/02/20 12:26
3	143	hrtf or (head adj related adj transfer adj function)	USPAT	2003/02/20 12:27
4	31	(time with domain) and spatial and (hrtf or (head adj related adj transfer adj function))	USPAT	2003/02/20 12:27
5	31	((time with domain) and spatial and (hrtf or (head adj related adj transfer adj function))) and filter$3	USPAT	2003/02/20 12:33
6	26	(((time with domain) and spatial and (hrtf or (head adj related adj transfer adj function))) and filter$3) and @ay<=1997	USPAT	2003/02/20 12:34

L Number	Hits	Search Text	DB	Time stamp
1	158	(eigen$8) with filter$3	USPAT	2003/02/20 12:15
2	20085	time with domain	USPAT	2003/02/20 12:16
3	41	((eigen$8) with filter$3) and (time with domain)	USPAT	2003/02/20 11:39
4	10	(((eigen$8) with filter$3) and (time with domain)) and spatial	USPAT	2003/02/20 11:40
5	35	(eigen$8) with filter$3	EPO; JPO; DERWENT; IBM_TDB	2003/02/20 12:15
6	5374	time with domain	EPO; JPO; DERWENT; IBM_TDB	2003/02/20 12:16
7	0	((eigen$8) with filter$3) and (time with domain)	EPO; JPO; DERWENT; IBM_TDB	2003/02/20 12:16

L4 ANSWER 1 OF 1 INSPEC COPYRIGHT 2003 IEE
AN 1996:5414010 INSPEC DN A9624-4280S-001; B9612-6260-053
TI Optical dispersion eigencompensators for high-speed long-haul IM/DD lightwave systems: computer simulation.
AU Ngo, N.Q.; Binh, L.N.; Xianda Dai (Dept. of Electr. & Comput. Syst. Eng., Monash Univ., Clayton, Vic., Australia)
SO Journal of Lightwave Technology (Oct. 1996) vol.14, no.10, p.2097-107. 30 refs.
Doc. No.: S0733-8724(96)07652-9
Published by: IEEE
Price: CCCC 0733-8724/96/$05.00
CODEN: JLTEDG ISSN: 0733-8724
SICI: 0733-8724(199610)14:10L.2097:ODEH;1-F
DT Journal
TC Practical; Theoretical
CY United States
LA English
AB This paper proposes what is believed to be the first linear optical dispersion-compensating technique capable of more effectively compensating for dispersively chirped signal than dispersively chirp-free signal. An effective digital **eigen-filter** approach is introduced for designing optical dispersion eigencompensators (ODECs) for compensation of the combined effects of laser chirp and fiber chromatic dispersion at 1550 nm in high-speed long-haul intensity-modulation direct-detection (IM/DD) lightwave systems. An integrated-optic synthesis of the ODEC using planar lightwave circuit (PLC) technology is proposed to enable high-speed signal regeneration. The proposed eigencompensating scheme is shown to result in the phenomenon of optical power enhancement: the combined effects of laser chirp, fiber chromatic dispersion and ODEC group delay can re-open the receiver eye further than the ideal eye-opening. The eigencompensating approach is shown to compare favorably with the Chebyshev filter technique in both the frequency and **time domains**.
CC A4280S Optical communications devices; A4282 Integrated optics; A4280W Ultrafast optical techniques; B6260 Optical links and equipment; B4140 Integrated optics; B6120 Modulation methods
CT CHIRP MODULATION; COMPENSATION; EIGENVALUES AND EIGENFUNCTIONS; FILTERING THEORY; INTEGRATED OPTICS; INTERMODULATION; OPTICAL FIBRE COMMUNICATION; OPTICAL FIBRE DISPERSION; OPTICAL MODULATION; OPTICAL RECEIVERS; SIMULATION
ST optical dispersion eigencompensators; high-speed long-haul IM/DD lightwave systems; computer simulation; linear optical dispersion-compensating technique; dispersively chirped signal compensation; dispersively chirp-free signal; **effective digital eigen-filter approach**; laser chirp; fiber chromatic dispersion; high-speed long-haul intensity-modulation direct-detection lightwave systems; integrated-optic synthesis; planar lightwave circuit; high-speed signal regeneration; eigencompensating scheme; optical power enhancement; receiver eye; ideal eye-opening; Chebyshev filter technique; **time domains**; frequency domains; 1550 nm
PHP wavelength 1.55E-06 m

=> d his all

(FILE 'HOME' ENTERED AT 12:18:35 ON 20 FEB 2003)

FILE 'INSPEC' ENTERED AT 12:18:44 ON 20 FEB 2003
L1 9 S EIGEN (W) FILTER
L2 9 S EIGEN (W) FILTER?
L3 32951 S TIME (W) DOMAIN
L4 1 S L2 AND L3

=> d all 1-16

L1 ANSWER 1 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 2002:7378944 INSPEC DN B2002-10-6150D-013
TI Noise optimized eigenfilter design of time-domain equalizers for DMT systems.
AU Tkacenko, A.; Vaidyanathan, P.P. (Dept. of Electr. Eng., California Inst. of Technol., Pasadena, CA, USA)
SO 2002 IEEE International Conference on Communications. Conference Proceedings. ICC 2002 (Cat. No.02CH37333)
Piscataway, NJ, USA: IEEE, 2002. p.54-8 vol.1 of 5 vol.lvi+3456 pp. 11 refs. Also available on CD-ROM in PDF format
Conference: New York, NY, USA, 28 April-2 May 2002
Price: CCCC 0-7803-7400-2/02/$17.00
ISBN: 0-7803-7400-2
DT Conference Article
TC Theoretical; Experimental
CY United States
LA English
AB The design of time-domain equalizers or TEQs for discrete multitone modulation (DMT) systems has recently received much attention. In this paper, we present a generalization of one such design method which takes into account the noise observed in a DMT channel. Furthermore, we show how this generalization can be used for the design of fractionally spaced equalizers or FSEs. Experimental results are presented showing that our design method performs better than other known techniques.
CC B6150D Communication channel equalisation and identification; B6140B Filtering methods in signal processing; B6120 Modulation and coding methods
CT EIGENVALUES AND EIGENFUNCTIONS; EQUALISERS; FILTERING THEORY; MODULATION; TIME-DOMAIN SYNTHESIS
ST time-domain equalizers; discrete multitone modulation; DMT systems; TEQ; fractionally spaced equalizers; noise optimized eigenfilter design
ET Es*F*S; FSEs; F cp; cp; S cp; Es cp

L1 ANSWER 2 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 2002:7292765 INSPEC DN B2002-07-1270F-006
TI Design of a class of IIR eigenfilters with time- and frequency-domain constraints.
AU Soo-Chang Pei; Chia-Chen Hsu; Peng-Hua Wang (Dept. of Electr. Eng., Nat. Taiwan Univ., Taipei, Taiwan)
SO IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing (Feb. 2002) vol.49, no.2, p.145-51. 20 refs.
Doc. No.: S1057-7130(02)04745-6
Published by: IEEE
Price: CCCC 1057-7130/02/$17.00
CODEN: ICSPE5 ISSN: 1057-7130
SICI: 1057-7130(200202)49:2L.145:DCEW;1-6
DT Journal
TC Theoretical
CY United States
LA English
AB An effective eigenfilter approach is presented to design special classes of infinite-impulse response (IIR) filters with time- and frequency-domain constraints is presented. By minimizing a quadratic measure of the error in the passband and stopband, an eigenvector of an appropriate real symmetric and positive-definite matrix is computed to get

the filter coefficients. Several IIR filters such as notch filters, Nyquist filters and partial response filters can be easily designed by this approach. Some numerical design examples are illustrated to show the effectiveness of this approach.

CC B1270F Digital filters; B1265A Digital circuit design, modelling and testing

CT EIGENVALUES AND EIGENFUNCTIONS; FREQUENCY-DOMAIN SYNTHESIS; IIR FILTERS; NETWORK SYNTHESIS; NOTCH FILTERS; TIME-DOMAIN SYNTHESIS

ST time domain; frequency domain; infinite-impulse response eigenfilter; quadratic error minimization; real symmetric positive-definite matrix; eigenvector; notch filter; Nyquist filter; partial response filter; numerical design

L1 ANSWER 3 OF 16 INSPEC COPYRIGHT 2002 IEE

AN 2001:6931306 INSPEC DN B2001-06-1270F-009; C2001-06-5240-007

TI Laguerre network design in complex domain.

AU Masnadi-Shirazi, M.A.; Safdar, M. (Dept. of Electr. Eng., Shiraz Univ., Iran)

SO ICECS 2000. 7th IEEE International Conference on Electronics, Circuits and Systems (Cat. No.00EX445)
Piscataway, NJ, USA: IEEE, 2000. p.95-8 vol.1 of 2 vol.xxiv+1033 pp. 14 refs.
Conference: Jounieh, Lebanon, 17-20 Dec 2000
Sponsor(s): IEEE CAS Soc.; Nat. Council for Sci. Res., Lebanon; American Univ. Beirut, Lebanon; Comput. Inf. Syst., Lebanon; IEEE LAU Student Branch; INDEVCO Group, Lebanon; Nortel Networks, Canada
Price: CCCC 0 7803 6542 9/2000/$10.00
ISBN: 0-7803-6542-9

DT Conference Article

TC Theoretical

CY United States

LA English

AB An eigenfilter method is developed for design of arbitrary complex coefficient Laguerre digital filters. By minimizing a quadratic measure of the error in the passband and stopband, a complex eigenvector of an appropriate complex Hermitian and positive definite matrix is computed to obtain the complex-valued Laguerre filter coefficients. Also two analytical methods are proposed to evaluate the optimum Laguerre parameter. These are: a modified version of the real Laguerre case in time domain, and a new method for the frequency domain.
The numerical exhaustive search method, used in the real Laguerre filter, can also be applied to the complex case.

CC B1270F Digital filters; B6140B Filtering methods in signal processing; B0290H Linear algebra (numerical analysis); C5240 Digital filters; C1260S Signal processing theory; C4140 Linear algebra (numerical analysis)

CT DIGITAL FILTERS; EIGENVALUES AND EIGENFUNCTIONS; FIR FILTERS; FREQUENCY-DOMAIN SYNTHESIS; HERMITIAN MATRICES; IIR FILTERS; TIME-DOMAIN SYNTHESIS

ST Laguerre network design; complex domain; eigenfilter method; quadratic measure; passband error; stopband error; complex eigenvector; complex Hermitian; positive definite matrix; time domain; frequency domain; exhaustive search method

L1 ANSWER 4 OF 16 INSPEC COPYRIGHT 2002 IEE

AN 2000:6615511 INSPEC DN B2000-07-6150D-032

TI A frequency-domain eigenfilter approach for equalization in discrete multitone systems.

AU Bo Wang; Adali, T. (Dept. of Comput. Sci. & Electr. Eng., Maryland Univ., Baltimore, MD, USA)

SO Conference Record of the Thirty-Third Asilomar Conference on Signals,

Systems, and Computers (Cat. No.CH37020)
Editor(s): Mathews, M.B.
Piscataway, NJ, USA: IEEE, 1999. p.1058-62 vol.2 of 2 vol.(xxv+1689) pp. 14 refs.
Conference: Pacific Grove, CA, USA, 24-27 Oct 1999
Price: CCCC 0 7803 5700 0/99/$10.00
ISBN: 0-7803-5700-0
DT Conference Article
TC Theoretical
CY United States
LA English
AB The discrete multitone (DMT) modulation has been chosen as the industry standard for asymmetrical digital subscriber loop (ADSL) modems and is also a candidate scheme for very-high-speed digital subscriber line (VDSL)
systems. The DMT system works on the condition that the length of the channel response is not longer than that of the guard band known as cyclic
prefix to avoid intersymbol interference (ISI). A time-domain equalizer (TEQ) is utilized in the DMT system to shorten the effective channel impulse response such that the data rate loss due to
the use of cyclic prefix is reduced. In this paper, we propose a new frequency-domain eigenfilter approach to train the TEQ. Simulation results indicate that this algorithm can effectively shorten the channel response. Furthermore, we show that this frequency-domain eigenfilter method provides different TEQ solutions by computing the eigenvectors corresponding to several smallest eigenvalues of a performance matrix.
CC B6150D Communication channel equalisation and identification; B6120 Modulation and coding methods; B6220B Subscriber loops; B6140B Filtering methods in signal processing
CT DIGITAL FILTERS; DIGITAL SUBSCRIBER LINES; EIGENVALUES AND EIGENFUNCTIONS;
EQUALISERS; FREQUENCY-DOMAIN ANALYSIS; INTERFERENCE SUPPRESSION; INTERSYMBOL INTERFERENCE; MODULATION; TIME-DOMAIN
ANALYSIS; TRANSIENT RESPONSE
ST frequency-domain eigenfilter approach; equalization; discrete multitone systems; DMT modulation; asymmetrical digital subscriber loop modems; ADSL modems; very-high-speed digital subscriber line systems; VDSL
systems; channel response; guard band; cyclic prefix; intersymbol interference; time-domain equalizer; TEQ; channel impulse response; data rate loss; performance matrix

L1 ANSWER 5 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1999:6263999 INSPEC DN B1999-07-6140B-020; C1999-07-5260-017
TI A method for design of Mth-band filters.
AU Wisutmethangoon, Y.; Nguyen, T.Q. (Dept. of Electr. & Comput. Eng., Boston
Univ., MA, USA)
SO IEEE Transactions on Signal Processing (June 1999) vol.47, no.6, p.1669-78. 16 refs.
Doc. No.: S1053-587X(99)03680-6
Published by: IEEE
Price: CCCC 1053-587X/99/$10.00
CODEN: ITPRED ISSN: 1053-587X
SICI: 1053-587X(199906)47:6L.1669:MDBF;1-8
DT Journal
TC Practical; Theoretical
CY United States
LA English

AB The objective of this paper is to present a theory, constraints, and a design method for nonlinear-phase halfband and Mth-band filters. Based on a time-domain property, the constraints and properties in the frequency domain are derived. They are the generalization of the well-known conditions for linear-phase Mth-band filters. Having found all necessary conditions, we present the design method based on an eigenfilter that minimizes the mean-squared errors. The design method is also extended to the design of nonlinear-phase Mth-band filters with properties of R-regularity, or equiripple stopband attenuation, or impulse responses that have complex coefficients. Design examples of various Mth-band filters with different properties are presented, discussed, and compared with the linear-phase case.
CC B6140B Filtering methods in signal processing; B1160 Nonlinear network analysis and design; B0290F Interpolation and function approximation (numerical analysis); B1270F Digital filters; B1265A Digital circuit design, modelling and testing; C5260 Digital signal processing; C4130 Interpolation and function approximation (numerical analysis); C5240 Digital filters
CT CHANNEL BANK FILTERS; FIR FILTERS; FREQUENCY-DOMAIN SYNTHESIS; MEAN SQUARE ERROR METHODS; NONLINEAR FILTERS; NONLINEAR NETWORK SYNTHESIS
ST Mth-band filters design; constraints; nonlinear-phase halfband filter; time-domain property; frequency domain; linear-phase Mth-band filters; necessary conditions; eigenfilter; mean-squared errors; R-regularity; equiripple stopband attenuation; impulse responses; complex coefficients; filter banks; FIR filter

L1 ANSWER 6 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1998:6053879 INSPEC DN B9811-6140-326; C9811-5260-076
TI Embedded FIR generalized eigenfilters using test inputs.
AU Coleman, J.O. (Naval Res. Lab., Washington, DC, USA)
SO Proceedings of the 1998 IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP '98 (Cat. No.98CH36181)
New York, NY, USA: IEEE, 1998. p.1313-16 vol.3 of 6 vol. lxiii+3816 pp. 8 refs.
Conference: Seattle, WA, USA, 12-15 May 1998
Sponsor(s): IEEE Signal Process. Soc
Price: CCCC 0 7803 4428 6/98/$10.00
ISBN: 0-7803-4428-6
DT Conference Article
TC Theoretical
CY United States
LA English
AB A systematic approach is proposed for the individual or joint design of FIR filters to meet specifications on either a single filter or an embedding system (possibly multirate). System power gains in response to particular input spectra are optimized using a generalized eigenvector method. Numerical integration is avoided through a time-domain formulation. Real or complex filters with linear or nonlinear phase or N-th band properties are easily handled.
CC B6140 Signal processing and detection; B1270F Digital filters; C5260 Digital signal processing; C5240 Digital filters
CT CIRCUIT OPTIMISATION; DIGITAL FILTERS; EIGENVALUES AND EIGENFUNCTIONS; FILTERING THEORY; FIR FILTERS; LOW-PASS FILTERS; TIME-DOMAIN SYNTHESIS
ST embedded FIR generalized eigenfilters; test inputs; FIR filters; systematic approach; embedding system; power gains; input spectra; generalized eigenvector method; time-domain formulation; real filters; complex filters; nonlinear phase filters; linear phase filters; N-th band properties
ET N

L1 ANSWER 7 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1998:6020933 INSPEC DN B9810-6140-180; C9810-5260-031
TI Nonlinear phase Mth band filter and applications in filter bank design.
AU Wisutmethangoon, Y. (Dept. of Electr. & Comput. Eng., Wisconsin Univ., Madison, WI, USA); Nguyen, T.Q.
SO Conference Record of the Thirty-First Asilomar Conference on Signals, Systems and Computers (Cat. No.97CB36136)
Editor(s): Fargues, M.P.; Hippenstiel, R.D.
Los Alamitos, CA, USA: IEEE Comput. Soc, 1998. p.696-700 vol.1 of 2 vol. xxiii+1749 pp. 8 refs.
Conference: Pacific Grove, CA, USA, 2-5 Nov 1997
Sponsor(s): Naval Postgraduate Shool, Monterey; San Jose State Univ.; IEEE
Signal Process. Soc
Price: CCCC 1058-6393/98/$10.00
ISBN: 0-8186-8316-3
DT Conference Article
TC Application; Practical; Theoretical
CY United States
LA English
AB The definition of a nonlinear phase Mth band filter in the time domain is extended from that of the linear phase Mth band filter. The corresponding contraints in the frequency domain are derived based on the proposed time-domain property. They are the general cases of the well-known linear phase conditions. An eigenfilter design method is discussed and an example is shown to demonstrate the theory. Application in a two-channel filter bank and the dyadic wavelet is also discussed.
CC B6140 Signal processing and detection; B1160 Nonlinear network analysis and design; B1270F Digital filters; B0290Z Other numerical methods; C5260 Digital signal processing; C5240 Digital filters; C4190 Other numerical methods
CT BAND-PASS FILTERS; DIGITAL FILTERS; FILTERING THEORY; FREQUENCY-DOMAIN SYNTHESIS; NONLINEAR FILTERS; NONLINEAR NETWORK SYNTHESIS; WAVELET TRANSFORMS
ST nonlinear phase Mth band filter; filter bank design; time domain ; frequency domain; time-domain property; linear phase conditions; eigenfilter design method; two-channel filter bank; dyadic wavelet

L1 ANSWER 8 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1996:5414010 INSPEC DN A9624-4280S-001; B9612-6260-053
TI Optical dispersion eigencompensators for high-speed long-haul IM/DD lightwave systems: computer simulation.
AU Ngo, N.Q.; Binh, L.N.; Xianda Dai (Dept. of Electr. & Comput. Syst. Eng., Monash Univ., Clayton, Vic., Australia)
SO Journal of Lightwave Technology (Oct. 1996) vol.14, no.10, p.2097-107. 30 refs.
Doc. No.: S0733-8724(96)07652-9
Published by: IEEE
Price: CCCC 0733-8724/96/$05.00
CODEN: JLTEDG ISSN: 0733-8724
SICI: 0733-8724(199610)14:10L.2097:ODEH;1-F
DT Journal
TC Practical; Theoretical
CY United States
LA English
AB This paper proposes what is believed to be the first linear optical dispersion-compensating technique capable of more effectively compensating for dispersively chirped signal than dispersively chirp-free signal. An

effective digital eigen-filter approach is introduced for designing optical dispersion eigencompensators (ODECs) for compensation of the combined effects of laser chirp and fiber chromatic dispersion at 1550 nm in high-speed long-haul intensity-modulation direct-detection (IM/DD) lightwave systems. An integrated-optic synthesis of the ODEC using planar lightwave circuit (PLC) technology is proposed to enable high-speed signal regeneration. The proposed eigencompensating scheme is shown to result in the phenomenon of optical power enhancement: the combined effects of laser chirp, fiber chromatic dispersion and ODEC group delay can re-open the receiver eye further than the ideal eye-opening. The eigencompensating approach is shown to compare favorably with the Chebyshev filter technique in both the frequency and time domains.

CC A4280S Optical communications devices; A4282 Integrated optics; A4280W Ultrafast optical techniques; B6260 Optical links and equipment; B4140 Integrated optics; B6120 Modulation methods

CT CHIRP MODULATION; COMPENSATION; EIGENVALUES AND EIGENFUNCTIONS; FILTERING THEORY; INTEGRATED OPTICS; INTERMODULATION; OPTICAL FIBRE COMMUNICATION; OPTICAL FIBRE DISPERSION; OPTICAL MODULATION; OPTICAL RECEIVERS; SIMULATION

ST optical dispersion eigencompensators; high-speed long-haul IM/DD lightwave systems; computer simulation; linear optical dispersion-compensating technique; dispersively chirped signal compensation; dispersively chirp-free signal; effective digital eigen-filter approach; laser chirp; fiber chromatic dispersion; high-speed long-haul intensity-modulation direct-detection lightwave systems; integrated-optic synthesis; planar lightwave circuit; high-speed signal regeneration; eigencompensating scheme; optical power enhancement; receiver eye; ideal eye-opening; Chebyshev filter technique; time domains; frequency domains; 1550 nm

PHP wavelength 1.55E-06 m

L1 ANSWER 9 OF 16 INSPEC COPYRIGHT 2002 IEE

AN 1995:5015759 INSPEC DN B9509-6140-172; C9509-1260-150

TI An efficient least-squares approach for the design of two-dimensional linear-phase nonrecursive filters.

AU Sunder, S. (Dept. of Electr. Eng., Concordia Univ., Montreal, Que., Canada); Ramachandran, R.P.

SO 1994 IEEE International Symposium on Circuits and Systems (Cat. No.94CH3435-5)
New York, NY, USA: IEEE, 1994. p.577-80 vol.2 of 6 vol. (494+644+300+366+794+510) pp. 10 refs.
Conference: London, UK, 30 May-2 June 1994
ISBN: 0-7803-1915-X

DT Conference Article

TC Theoretical

CY United States

LA English

AB A method is described which can be used to design two-dimensional nonrecursive linear-phase filters. The approach is based on formulating the absolute mean-square error between the amplitude responses of the practical and ideal digital filters as a quadratic function. The coefficients of the filters are obtained by solving a set of linear equations. This method leads to a lower mean-square error and is computationally more efficient than the eigenfilter method. The method is extended to the design of filters with time-domain constraints.

CC B6140 Signal processing and detection; B0290F Interpolation and function approximation; B1270F Digital filters; C1260 Information theory; C4130 Interpolation and function approximation; C5240 Digital filters

CT COMPUTATIONAL COMPLEXITY; DELAY CIRCUITS; ERRORS; FILTERING THEORY; LEAST SQUARES APPROXIMATIONS; TWO-DIMENSIONAL DIGITAL FILTERS
ST least-squares approach; 2D nonrecursive filters; linear-phase nonrecursive filters; absolute mean-square error; amplitude responses; quadratic function; filter coefficients; linear equations; time-domain constraints
ET D

L1 ANSWER 10 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1994:4839689 INSPEC DN B9501-1270F-025; C9501-5240-025
TI A unified framework for the least-squares design of linear-phase nonrecursive filters.
AU Ramachandran, R.P. (Dept. of Electr. Eng., Rutgers Univ., Piscataway, NJ, USA); Sunder, S.
SO Proceedings of the 36th Midwest Symposium on Circuits and Systems (Cat. No.93CH3381-1)
New York, NY, USA: IEEE, 1993. p.480-3 vol.1 of 2 vol. xxxv+1565 pp. 4 refs.
Conference: Detroit, MI, USA, 16-18 Aug 1993
Sponsor(s): Wayne State Univ.; IEEE Circuits & Syst. Soc
Price: CCCC CH3381-1/93/$01.00
ISBN: 0-7803-1760-2
DT Conference Article
TC Theoretical
CY United States
LA English
AB A method is described which can be used to design a wide class of nonrecursive linear-phase filters including those with arbitrary magnitude specifications and with time domain constraints. The approach is based on formulating the weighted mean-square error between the amplitude responses of the practical and ideal filters as a quadratic function. The filter coefficients are obtained by solving a set of linear equations. This method leads to a lower weighted mean-square error and is computationally more efficient than both the eigenfilter method and the method based on the Remez exchange algorithm. However, the main advantage of our method lies in its computational efficiency. Design examples of many different types of filters are provided.
CC B1270F Digital filters; B6140 Signal processing and detection; B0290F Interpolation and function approximation; C5240 Digital filters; C1260 Information theory; C4130 Interpolation and function approximation
CT DELAY CIRCUITS; DIGITAL FILTERS; FILTERING THEORY; LEAST MEAN SQUARES METHODS
ST unified framework; least-squares design; linear-phase nonrecursive filters; arbitrary magnitude specifications; time domain constraints; weighted mean-square error; amplitude responses; quadratic function; filter coefficients; linear equations; computational efficiency

L1 ANSWER 11 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1994:4704952 INSPEC DN B9408-6140-125; C9408-1260-096
TI Design of 1-D and 2-D IIR eigenfilters.
AU Soo-Chang Pei (Dept. of Electr. Eng., Nat. Taiwan Univ., Taipei, Taiwan); Jong-Jy Shyu
SO IEEE Transactions on Signal Processing (April 1994) vol.42, no.4, p.962-6.
12 refs.
Price: CCCC 1053-587X/94/$04.00
CODEN: ITPRED ISSN: 1053-587X
DT Journal
TC Practical; Theoretical

CY United States
LA English
AB An effective method is proposed for the design of recursive digital filters in the time/spatial domain. The method is based on the computation
of an eigenvalue and its corresponding eigenvector of an appropriate real symmetric and positive-definite matrix derived from the objective error function of the impulse response in the least-squares sense. The method can be used to design 1D IIR digital filters as well as 2D IIR digital filters. The method is easy and the performance is comparable to those of the existing methods. One of the main advantages of the proposed method is
that the solution is obtained directly without the need for iteration.
CC B6140 Signal processing and detection; C1260 Information theory; C5260 Digital signal processing
CT DIGITAL FILTERS; EIGENVALUES AND EIGENFUNCTIONS; FILTERING AND PREDICTION THEORY; TIME-DOMAIN SYNTHESIS; TWO-DIMENSIONAL DIGITAL FILTERS
ST 2D IIR eigenfilters; 1D IIR eigenfilters; design; recursive digital filters; spatial domain; time domain; eigenvalue; eigenvector; positive-definite matrix; objective error function; impulse response; least-squares; 2D IIR digital filters; 1D IIR digital filters; performance
ET D

L1 ANSWER 12 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1994:4657746 INSPEC DN B9406-6140-032; C9406-1260-022
TI A unified and efficient least-squares design of linear-phase nonrecursive filters.
AU Ramachandran, R.P. (CAIP Center, Rutgers Univ., Piscataway, NJ, USA); Sunder, S.
SO Signal Processing (March 1994) vol.36, no.1, p.41-53. 20 refs.
Price: CCCC 0165-1684/94/$2.25+0.25
CODEN: SPRODR ISSN: 0165-1684
DT Journal
TC Practical; Theoretical
CY Netherlands
LA English
AB A method is described which can be used to design a wide class of nonrecursive linear-phase filters including those with arbitrary magnitude
specifications and with time-domain constraints. The approach is based on formulating the weighted mean-square error between the amplitude responses of the practical and ideal filters as a quadratic function. The filter coefficients are obtained by solving a set of linear equations. This method leads to a lower weighted mean-square error and is computationally more efficient than both the eigenfilter method and the method based on the Remez exchange algorithm. However, the main advantage of the present method lies in its computational efficiency. Design examples of many different types of filters are provided.
CC B6140 Signal processing and detection; C1260 Information theory
CT FILTERING AND PREDICTION THEORY; FILTERS; LEAST SQUARES APPROXIMATIONS
ST unified efficient least-squares design; linear-phase nonrecursive filters;
arbitrary magnitude specifications; time-domain constraints; weighted mean-square error; amplitude responses; quadratic function; filter coefficients; linear equations; computational efficiency

L1 ANSWER 13 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1993:4440618 INSPEC DN B9308-6140C-131
TI Design of two-dimensional FIR eigenfilters for sampling-structure conversion.

AU Pei, S.-C. (Dept. of Electr. Eng., Nat. Taiwan Univ., Taipei, Taiwan); Shyu, J.-J.
SO IEEE Transactions on Circuits and Systems for Video Technology (April 1993) vol.3, no.2, p.158-62. 7 refs.
Price: CCCC 1051-8215/93/$03.00
CODEN: ITCTEM ISSN: 1051-8215
DT Journal
TC Theoretical; Experimental
CY United States
LA English
AB By minimizing a quadratic measure of the error in the passband and stopband, a 2-D diamond-shaped finite impulse response, (FIR) eigenfilter is designed for sampling-structure conversion. Time- and frequency-domain constraints, are easily incorporated into this method, such that the design difficulty inherent to sample-conversion filters can be effectively solved. A design example and simulation with test pictures are presented to demonstrate the effectiveness of the approach.
CC B6140C Optical information and image processing; B1270F Digital filters
CT IMAGE PROCESSING; TWO-DIMENSIONAL DIGITAL FILTERS
ST time domain constraints; FIR eigenfilters; sampling-structure conversion; quadratic measure; passband; stopband; 2-D diamond-shaped finite impulse response; frequency-domain constraints; simulation; test pictures
ET D

L1 ANSWER 14 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1992:4229773 INSPEC DN B9210-1270F-029; C9210-5240-022
TI Design of IFIR eigenfilters.
AU Chen, T.; Vaidyanathan, P.P. (Dept. of Electr. Eng., California Inst. of Technol., Pasadena, CA, USA)
SO 1991 IEEE International Symposium on Circuits and Systems (Cat. No.91CH3006-4)
New York, NY, USA: IEEE, 1991. p.264-7 vol.1 of 5 vol. xlviii+3177 pp. 9 refs.
Conference: Singapore, 11-14 June 1991
Sponsor(s): IEEE
Price: CCCC CH3006-4/91/0000-0264$01.00
ISBN: 0-7803-0050-5
DT Conference Article
TC Theoretical
CY United States
LA English
AB The interpolated finite impulse response (IFIR) and eigenfilter approaches are combined. The eigenfilter approach to the design of FIR filters requires very simple computation and has the advantage that
both time- and frequency-domain constraints can be incorporated. On the other hand, the IFIR filter approach can design FIR filters efficiently and implement them with significant savings in the number of arithmetic operations. The authors present a design example which gives a comparison of the eigenfilter approach and linear programming approach under the unit-step-response constraint.
CC B1270F Digital filters; B6140 Signal processing and detection; B0210 Algebra; C5240 Digital filters; C1260 Information theory; C1110 Algebra
CT DIGITAL FILTERS; FILTERING AND PREDICTION THEORY; INTERPOLATION; MATRIX ALGEBRA; NYQUIST CRITERION; STEP RESPONSE
ST interpolated FIR eigenfilters; filter design; time-domain constraints; Nyquist constraint; finite impulse response; frequency-domain constraints; arithmetic operations; unit-step-response constraint

L1 ANSWER 15 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1989:3317075 INSPEC DN B89015138
TI 2D FIR eigenfilters.
AU Nashashibi, A.; Charalambous, C. (Dept. of Electr. & Comput. Eng., Kuwait Univ., Safat, Kuwait)
SO 1988 IEEE International Symposium on Circuits and Systems. Proceedings (Cat. No.88CH2458-8)
New York, NY, USA: IEEE, 1988. p.1037-40 vol.2 of 3 vol. 2915 pp. 4 refs.
Conference: Espoo, Finland, 7-9 June 1988
Sponsor(s): IEEE
Price: CCCC CH2458-8/88/0000-1037$01.00
DT Conference Article
TC Theoretical
CY United States
LA English
AB A novel method for designing linear-phase two-dimensional (2D) FIR (finite impulse response) digital filters is presented. The method is based on minimizing an appropriately defined least-squares error function taken over the continuous passband and stopband frequency regions. The optimization problem reduces to that of computing the eigenvector corresponding to the minimum eigenvalue of a real symmetric and positive definite matrix. For symmetric fan filters, a closed-form solution is obtained that leads to a simple design procedure for this class of filters. The design method is general enough to incorporate both time- and frequency-domain constraints.
CC B1270F Digital filters; B1130 General analysis and synthesis methods; B0260 Optimisation techniques
CT EIGENVALUES AND EIGENFUNCTIONS; LEAST SQUARES APPROXIMATIONS; MINIMISATION; NETWORK SYNTHESIS; TWO-DIMENSIONAL DIGITAL FILTERS
ST linearphase 2-D FIR digital filters; filter design; minimization; time domain constraint; FIR eigenfilters; least-squares error function; continuous passband; stopband frequency; optimization problem; eigenvector; eigenvalue; symmetric fan filters; closed-form solution; frequency-domain constraints
ET D

L1 ANSWER 16 OF 16 INSPEC COPYRIGHT 2002 IEE
AN 1987:2880884 INSPEC DN B87032010; C87028729
TI Eigenfilters: a new approach to least-squares FIR filter design and applications including Nyquist filters.
AU Vaidyanathan, P.P.; Nguyen, T.Q. (Dept. of Electr. Eng., California Inst. of Technol., Pasadena, CA, USA)
SO IEEE Transactions on Circuits and Systems (Jan. 1987) vol.CAS-34, no.1, p.11-23. 32 refs.
Price: CCCC 0098-4094/87/0100-0011$01.00
CODEN: ICSYBT ISSN: 0098-4094
DT Journal
TC Theoretical
CY United States
LA English
AB A method of designing linear-phase FIR filters is proposed by minimizing a quadratic measure of the error in the passband and stopband. The method is based on the computation of an eigenvector of an appropriate real, symmetric, and positive-definite matrix. The proposed design procedure is general enough to incorporate both time-domain and frequency-domain constraints, e.g. Nyquist filters can be easily designed using this approach. The design time for the method is comparable to that of Remez exchange techniques. The passband and stopband errors in the

frequency domain can be made equiripple by an iterative process, which involves feeding back the approximation error at each iteration. Several numerical design examples and comparisons to existing methods are presented which demonstrate the usefulness of the suggested approach.

CC B1270F Digital filters; C5240 Digital filters

CT DIGITAL FILTERS; FREQUENCY-DOMAIN SYNTHESIS; LEAST SQUARES APPROXIMATIONS;
NETWORK SYNTHESIS; TIME-DOMAIN SYNTHESIS

ST equiripple filters; real symmetric matrix; passband errors; least-squares FIR filter; Nyquist filters; linear-phase FIR filters; eigenvector; positive-definite matrix; design procedure; time-domain; frequency-domain constraints; stopband errors; iterative process; approximation error

=> d his all

(FILE 'HOME' ENTERED AT 14:43:17 ON 13 SEP 2002)

FILE 'INSPEC' ENTERED AT 14:43:29 ON 13 SEP 2002

L1 16 S (EIGENFILTER? OR (EIGEN (W) FILTER?)) AND (TIME (W) DOMAIN)